LESSONS FROM KATRINA: WHAT WENT WRONG, WHAT WAS LEARNED, WHO'S MOST VULNERABLE

IRWIN REDLENER, MD*

DAVID M. ABRAMSON, PHD MPH**

RICHARD GARFIELD, RN DRPH***

I. INTRODUCTION

If humans did not occupy the planet, disasters would never occur. Massive climatic events, earthquakes, volcanic eruptions, and tsunamis would be regular occurrences, of course, and the earth would look like a dynamic cauldron of natural activity, changing the look and the balance of nature and natural events continuously and randomly. What morphs these natural phenomenon into catastrophic events we call "disasters" is simply the presence of human beings who by choice, chance, or necessity find themselves in harm's way.

The "human factors" may be straightforward and benign. For instance, people making their livelihood from the sea are at risk from coastal storms and tsunamis. Similarly, people are found living in areas at considerable risk for mudslides and volcanoes. It could even be said that living in New Orleans, a coastal city actually below sea level, is a gamble, as was so dramatically emphasized by the storms and subsequent flooding of August and September 2005.

On a more complex level, there is growing evidence to suggest that people may have a significant impact on seemingly natural events. To the extent that human behaviors, particularly massive consumption of fossil fuels and overloading the atmosphere with higher and higher levels of CO_2, accelerates the phenomenon known as global warming. This may actually be responsible for the growing frequency and severity of coastal storms. The point is that there is good reason to worry about more Katrina's in the future.

* Professor of Clinical Public Health, Director, National Center for Disaster Preparedness, Columbia University Mailman School of Public Health.
** Associate Research Scientist, Director of Research, National Center for Disaster Preparedness, Columbia University Mailman School of Public Health.
*** Professor of Clinical International Nursing, Columbia University Mailman School of Nursing.

And, what about earthquakes? Some 75 million Americans live over earthquake faults. Not only the well-known fault-lines on the West Coast of the U.S., but also the New Madrid fault that runs through the center of the country pose a constant threat in terms of possible subterranean turbulence that could literally devastate San Francisco or Memphis. As Professor Art Lerner-Lam of Columbia University's Earth Institute has put it, "geology is inevitable."[1] .

Unfortunately, some of humankind's most violent tendencies are also both inevitable and ubiquitous. Until international terrorism reached the United States at the level of the 9/11 attacks, Americans lived in a bubble, isolated from the violence against civilians for political purposes that plagues so many other nations. Now it's abundantly clear that man-made disasters, deliberate violence, or major industrial accidents pose continuous threats to all populations. Disasters—of all etiologies—are a fact of life.

II. IS PREVENTION OF DISASTERS EVEN POSSIBLE?

Public health principles offer a clear direction for how to keep populations at an optimal state of health—and much of it comes down to the capacity to prevent illness and injury in as many people as possible. It makes perfect sense. Why focus on chest surgery as the predominant way of managing lung cancer when the preferred course of action would be enhancing efforts to reduce smoking and exposure to other carcinogenic factors? Wouldn't it be better—that is, more effective and less costly—to assure clean water to communities in developing countries, rather than waiting to treat people for diarrheal disease and profound dehydration? This is really about the prevention of personal catastrophe—the sine qua non of public health theories.

It would also make sense to carefully examine the possibility of disaster prevention, through a classic public health lens. During the most challenging and dangerous years of the U.S.-U.S.S.R. nuclear arms race, Physicians for Social Responsibility[2] became well-known—and highly effective—for its persistent message: nuclear war among the superpowers would be an unimaginable catastrophe with consequences that could not be appreciably ameliorated or managed by medical care. So prevention was the only viable option. And, in this case, prevention meant backing away from the nuclear brink via diplomacy, to even include considering the possibility of eliminating nuclear arsenals altogether. And in the case of terrorism, prevention is also theoretically possible. Understanding and addressing the root causes of terrorism, for instance, are effective means of

[1] Personal communication

[2] See the group's website, www.psr.org. Founded in 1961, PSR enjoyed a surge of membership and influence from the late 1970s through the mid-1980s when tens of thousands activist physicians singularly focused on the threat and potential consequences of nuclear war. The group advocated for the control or elimination of nuclear arsenals via community organizing and lobbying the federal government. PSR remains active, though at somewhat lower membership numbers. Its agenda has since greatly expanded to encompass a range of concerns from gun control to environmental issues.

minimizing future violence. Optimal border and port surveillance, along with good counter-terrorism strategies, can sharply reduce the likelihood of radiological weapons entering the United States.

But what about natural disasters? Is there a role for prevention strategies here, as well? Although the hazard may not be stoppable, clearly the consequences to human populations can be minimized for many large-scale, otherwise dangerous natural phenomenon. The impact of Hurricane Katrina is a case in point.

III. THE IMPACT OF HURRICANE KATRINA ON THE GULF

Few disasters in modern U.S. history have caused as much damage, death, and dislocation as did the great storms and flooding of 2005. Compare the scope of this disaster to the land mass impact of Hurricane Andrew which struck South Florida in 1992. Though that storm was a true Category 5, the affected land mass was approximately 300 square miles. In contrast, though "only" a Category 3—possibly 4 at some points—Hurricane Katrina left a path of destruction that covered nearly 100,000 square miles[3]. With the secondary flooding of New Orleans, along with wide-range destruction of communities along the Gulf coast, some 1.5 million residents were initially displaced by the impact of that disaster. Internal migration at this magnitude has not been seen in the United States since the great dust bowl days of the 1930s. Almost an aside, as many as 18,000 businesses were destroyed in the storm and floods.

Ultimately, the cost of true recovery along the Gulf, including the rebuilding of New Orleans, will reach $200 billion—or more. Many of the internally displaced individuals and families have resettled in communities across the U.S., and tens of thousands will remain in federally supported temporary housing for the foreseeable future.

Even the death rate was still uncertain as of early 2007. Bodies long buried in the wreckage of New Orleans neighborhoods hardest hit by the storm continue to be found as the demolition and reconstruction moves slowly forward. Perhaps the "official" death toll will remain under 2,000. But a number of researchers are already looking at secondary deaths attributable to late effects of the storm, such as discontinuity from essential medical care, stress, and other factors still to be determined. Most prominently, Columbia University Professors John Mutter[4] and Richard Garfield have begun a study looking to understand the true fatality toll of Katrina. It is possible that actual deaths related to the catastrophe of 2005 may

[3] Hurricanes are classified by the National Oceanic and Atmospheric Administration's National Hurricane Center according to the Saffir-Simpson scale, in which wind speed is the determining factor. Category 3 hurricanes are characterized by wind speeds of 111 – 130 mph, Category 4 by wind speeds of 131 – 155 mph, and Category 5 hurricanes by wind speeds greater than 155 mph. For further details, see the National Hurricane Center website at www.nhc.noaa.gov.

[4] Mutter is deputy director and associate vice provost of The Earth Institute at Columbia University and a professor in the departments of earth and environmental sciences and of international and public affairs. Mutter and Garfield's project is entitled, "A Social Autopsy of Hurricane Katrina."

triple the official counts to date. And whatever the final fatality count, the consequences of Hurricane Katrina make this one of the worst U.S. disasters on record.

IV. A HURRICANE'S IMPACT ON WOMEN AND CHILDREN

Inasmuch as social advantage has often provided a buffer to the consequences of natural disasters, social vulnerability has left other populations precariously exposed. In the Child and Family Health Studies led by David Abramson and Richard Garfield[5], we interviewed members of 1,248 randomly sampled displaced or impacted households in Louisiana and Mississippi, post-Katrina. The study confirmed domestically what many other international disaster studies have found as well, the presence of a "poverty penalty" in which those with the least often suffer the most. The working class and working poor along the Gulf were particularly vulnerable to the economic consequences of the hurricane. Among Mississippi households with a salaried wage-earner prior to the hurricane, the working poor were two and a half times as likely to be jobless one year after the hurricane as were middle-class households. The impact on children of the social disruption and continued chaos and uncertainty has been devastating as well. Half of the parents and caregivers reported that the children in their homes had experienced emotional or behavioral problems since the hurricane, and the incidence of clinically-diagnosed depression and anxiety among children quadrupled since the hurricane. Nearly two-thirds of the women caregivers reported mental health scores consistent with severe mental health disability and stress.

The hallmark of such a mega-disaster as Hurricane Katrina is that it shreds the social networks and institutions, which provide a modicum of stability and coherence in people's lives. Women are particularly vulnerable when these social institutions deteriorate, particularly in their role as caregivers. Nearly forty percent of children in Mississippi had either not completed their school year or had missed a significant amount of class time. Combined with unsafe housing and neighborhoods, and unreliable systems of criminal justice and police protection, women often find themselves in a volatile home environment—the children are at home, disengaged from school; their spouse or partner is unemployed, with little economic opportunity available; their material possessions have mostly been destroyed; and they are living in extremely close quarters—often four or five family members in a 250 square foot trailer, for over a year, with no certain housing solution in sight. Many respondents spoke to us of the enormous strain on

[5] See D Abramson, R Garfield, and I Redlener, "The Recovery Divide: Poverty and the Widening Gap Among Mississippi Children and Families Affected by Hurricane Katrina," A Report of the National Center for Disaster Preparedness, Feb 2007, and D Abramson and R Garfield, "On the Edge: Children and Families Displaced by Hurricanes Katrina and Rita Face a Looming Medical and Mental Health Crisis," A Report of The National Center for Disaster Preparedness, Apr 2006. Both are accessible at www.ncdp.mailman.columbia.edu

personal relationships, and it is not surprising that mental health disability is so endemic.

V. PRECONDITIONS OF A DISASTER: WHAT WENT WRONG? WILL WE DO BETTER NEXT TIME?

It is important to recognize that a great deal of the carnage from the hurricane and flooding following Katrina was preventable. That is not to say that communities along the coast would have entirely avoided substantial damage. What could have been avoided, however, were many of the short and long-term related storm-related fatalities and severe impact on the City of New Orleans. There are a number of ways in which better planning, response and mitigation strategies could have made a substantial difference with respect to the observed consequences of the disaster. These include the proposed solutions set forth below.

A. Understanding and Mitigating Population Risk Factors that Increased Vulnerability in New Orleans' Most At-Risk Neighborhoods

It is clear that intractable poverty and social isolation increase vulnerability of populations to the effects of disasters. New Orleans faced serious poverty and poor access to health care and other essential services well before the storm. Lack of resources to evacuate or hear and respond to preparedness messages contributes to vulnerability. High rates of chronic and debilitating disease among the poorest New Orleans residents both reduced the ability to flee and increased susceptibility to consequences of drastic reductions in access to health care during and following the disaster. Conversely, reducing poverty and improving access to all services, including public transportation, would have a clearly beneficial effect on disaster survivability.

B. Addressing Dangerously Fragile Levees Prior to the Storm

The failure to act on known problems with the levees protecting New Orleans from storm-related floods was universally recognized as a major failure of government on all levels. Precarious levee stability was noted years before Hurricane Katrina made landfall, yet no officials saw to it that these flaws were repaired. In the absence of flooding from levee breakdown, Katrina would likely have had very little impact in New Orleans itself.

C. Creating a Workable, Comprehensive Disaster Response Plan

Nearly everything about the disaster planning process in pre-Katrina Louisiana was inadequate. There was little effective thought given to comprehensive, coordinated planning among local, state and federal agencies. Little or no effort was made to plan for involvement of non-governmental agencies, businesses and citizen groups. And public education around personal disaster

readiness was not at all effective.

D. Ensuring the Availability of Relevant Technology Needed for DisasterResponse

In New Orleans, just as in New York City on 9/11 some four years earlier, communications systems inadequacies contributed to the adverse outcomes. On the most basic level, many emergency response agencies were simply unable to communicate and coordinate with one another.

E. Developing Effective Plans for Returning Displaced Persons to Normal or Near-Normal Living Conditions as Soon as Possible Following a Major Disaster

The entire Gulf region was profoundly ill-prepared to cope with large numbers of displaced families and individuals. Based on findings from our Child and Family Health Studies, by eighteen months following the storm evidence was already mounting that conditions in FEMA (Federal Emergency Management Agency) supported trailers were having a measurably negative impact on children and families who were increasingly despairing about the options and timetable for returning to their original neighborhoods—or any semblance of a "normal community." High levels of depression and behavioral disorders in children, parental depression, and high rates of school absenteeism are among the consequences seen among the internally displaced families.

From a policy perspective, the needs of women and children would be better served if recovery policy was viewed from a development perspective, rather than the more conventional compensation model in which people are simply reimbursed for their losses and critical infrastructure is restored to its prior state. At a minimum, several areas that could be considered include:

- Instituting economic development programs that incorporate significant job-retraining and skill-building, as well as home-ownership development programs;
- Establishing community-based or school-based case managers to assist people in managing transitions to new schools and new communities;
- Creating a mechanism for community engagement, such as the "sweat equity" community development groups that proliferated in the 1980s and 1990s in successful urban reclamation projects, in which community residents could actively participate in rebuilding their homes and social institutions;
- Maximizing Medicaid and S-CHIP enrollment among eligible families and children, so as to cover a greater proportion of the uninsured children;
- Assuring ongoing mental health supports for children and caregivers.

While there are surely other issues that could have been in place to prevent much of the disastrous effects of Katrina on people most in harm's way, the above represents some of the more important factors. Of course, had many of the social vulnerabilities been addressed *prior* to August 2005, the Gulf region in general, and

New Orleans in particular, would have fared far better than the nightmare which unfolded when the levees gave way and flooded one of the nation's most vulnerable cities.

VI. CONCLUSION: WAKE-UP CALLS? OR SNOOZE ALARMS?

It is repeatedly said that large-scale or mega disasters of recent years, particularly the attacks of 9/11 and Hurricane Katrina were "wake-up calls." The implication being that we were so wounded and stunned by the impact of such events, that appropriate actions and resources would be devoted to make sure that the nation was prepared to avoid the mistakes and planning failures that exacerbated the consequences of the previous catastrophes.

In many ways, however, societal and governmental behaviors suggest that while we certainly got aroused by 9/11 and Katrina, even spending enormous sums on new technologies, planning capacity, and new agencies, the work has, so far, not been measurably effective. Poor leadership around disaster planning, lack of accountability, and persistent absence of necessary coordination among critical sectors continue to plague our ability to prevent or respond optimally to almost any mega-disaster. America awakes, albeit briefly and randomly, after major disasters. But we soon drift back to a state of unreasonable complacency. Perhaps, instead of "wake-up calls," the recent catastrophes, man-made and natural, would be better termed "snooze alarms."

That said, there is no reason to think that the situation cannot be remedied. National leadership, accompanied by true accountability and evidence-based planning could go a long way toward establishing a much more competent nation when it comes to preventing and mitigating whatever disasters unfold in the years to come.